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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/991,196	11/20/2001	Chih-Chien Liu	UMC-96-279 CON2	3908

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EXAMINER

SERGEANT, RABON A

ART UNIT PAPER NUMBER

1711

DATE MAILED: 06/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/991,196	Applicant(s) LIU ET AL.	
	Examiner Rabon Sergeant	Art Unit 1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 21-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: |

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1. Claims 21-31 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Support has not been found for the method as claimed. Specifically, it is unclear where support exists for the etching of the mask layer. Applicants are required to indicate where support exists for each claimed process step of the method. Furthermore, it is unclear how the subject matter of claim 30, drawn to the mask being a patterned photoresist layer, correlates to the step of etching the mask. It is unclear if the mask is etched to produce the pattern of the patterned photoresist layer. Applicants are required to indicate where support exists for this limitation as it pertains to the steps of forming and etching the mask.
2. Claims 21-31 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is unclear what operations are encompassed by the steps of forming the mask layer and etching the mask layer. It is unclear how the steps differ from the conventional process of developing a patterned mask layer.
3. Claims 21-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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As aforementioned within paragraph 2, it is unclear how to interpret what operations are encompassed by the forming and etching of the mask layer.

4. Claim 30 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As aforementioned within paragraph 1, it is unclear how to interpret the limitation of claim 30 in view of the mask etching step.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 21, 23, and 27-31 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tobben et al. ('126).

Tobben et al. disclose the production of semiconductor devices containing electrically conductive wires on a substrate, wherein the method comprises the deposition and etching of layers which correspond to those claimed by applicants. The position is taken that the applicants' claimed step of etching the mask is met by the disclosure pertaining to developing and patterning the mask at column 3, lines 29-40. See figures and columns 2-4. Patentees further teach at column 4, lines 10-26 that if an additional metalization layer is to be used, then a layer of dielectric material is deposited over the surface of the structure and within the grooves between the wiring lines. Patentees additionally teach that this layer may be formed by depositing silicon dioxide using high density plasma deposition techniques. The position is taken that applicants' method fails to exclude the use of a second metalization layer and that the last step of applicants' claimed process is met by the disclosure pertaining to the high density plasma deposition of the dielectric within the grooves between the wiring lines. The subject matter of claim 23 is disclosed by the figures. The subject matter of claim 27 is considered to be an inherent

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characteristic of the etching process, given that the degree of the etching away of the corners is not specified. The subject matter of claim 28 is considered to be inherent characteristics of the disclosed deposition process. The subject matter of claim 29 is considered to be an inherent characteristic of the disclosed deposition process. The subject matter of claim 31 is disclosed within Figures 1 and 6 and at column 2, line 29.

7. Alternatively, in view of the aforementioned teachings within Tobben et al., the position is taken that it would have been obvious to utilize a high density plasma deposition technique to incorporate a dielectric material onto the surface of the wiring line containing substrate and within the grooves between the wiring lines, so as to insulate the wiring lines from external influences.

8. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tobben et al. ('126).

As aforementioned within paragraphs 2 and 3, Tobben et al. are considered to disclose a process of filling grooves between conductive lines with dielectric material using high density plasma chemical vapor deposition. While patentees specifically disclose rectangular gaps or grooves, patentees fail to recite other cross-sectional shapes for the grooves, such as trapezoidal or triangular cross-sections; however, the position is taken that the production of such shapes by controlling the parameters of the etching process was known and conventional at the time of invention. Accordingly, the selection of such cross-sections amounts to an obvious design choice and the implementation of such choices requires only the control of result effective variables.

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9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

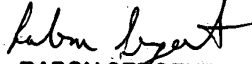
10. Claims 21-31 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-21 of U.S. Patent No. 6,117,345. Although the conflicting claims are not identical, they are not patentably distinct from each other because each claim set is drawn to methods of producing conducting structures wherein the layers of the deposition and etching steps are obvious in view of each other. It is not clear how the forming and etching of the mask layer differentiates the instant claims from those of the patent.

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11. Claims 21-31 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 50-69 of copending Application No. 09/546,174. Although the conflicting claims are not identical, they are not patentably distinct from each other because each claim set is drawn to methods of producing conducting structures wherein the layers of the deposition and etching steps are obvious in view of each other. It is not clear how the forming and etching of the mask layer differentiates the instant claims from those of the copending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Any inquiry concerning this communication should be directed to R. Sergent at telephone number (703) 308-2982.


RABON SERGENT
PRIMARY EXAMINER

R. Sergent

June 23, 2003